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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/521,147	09/07/2005	Takeshi Furuta	SON-2799	2779

23353 7590 03/16/2007
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WASHINGTON, DC 20036

EXAMINER

LEE, BENNY T

ART UNIT	PAPER NUMBER
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2817

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/16/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/521,147

Applicant(s)

FURUTA, TAKESHI

Examiner

Benny Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 January 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- ☐ Notice of Informal Patent Application
- ☐ Other: ____.

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The disclosure is objected to because of the following informalities: Page 2, line 25, note that “about several Ω ” should be rephrased as --on the order of several ohms (Ω)-- for clarity of description; line 30, note that “leaks a power” should be rephrased for clarity of description. Page 3, line 1, should “shut” correctly be --shunt-- for a proper characterization? Page 3, lines 3, 4, note that reference to “the transmissive property” is vague in meaning and needs clarification; line 6, note that reference to “the Similar problem” is vague in meaning and needs clarification; line 7, note that “using not FET” should be rephrased for clarity of description; line 16, note that “Disclosure” should be rewritten as --Summary-- such as to be consistent with PTO guidelines. Page 6, line 5, note that --(RF)-- should be inserted prior to “transmission path” for consistency with the labeling in the corresponding drawing figure. Page 6, line 24 & page 7, line 21, note that the “=” symbol should be rewritten as --is equivalent to-- for clarity of description. Appropriate correction is required.

The disclosure is objected to because of the following informalities: Note that the following reference labels need to be described with respect to the specification description of the corresponding drawing figure: FIGS. 2, 3, 4, 5, 6, 11 (RF PATH); FIGS. 2, 3 (11); FIGS. 2, 3, 5 (12); FIGS. 2, 3, 5, 6, 11 (13); FIGS 2, 11 (L1, L2, C); FIGS. 6, 8 (A); FIG. 8 (Q101, Q102, L101, AX); FIG. 9 (A=ON, A=OFF); FIG. 10, all reference labels therein. Appropriate correction is required.

The drawings are objected to because of the following: In FIG. 6, note that reference labels --14-- & --15-- should be respectively added, such as to be commensurate with the specification description at page 9, lines 26, 27; In FIGS. 8, 9, 12, 13, note that these drawing figures should be labels --CONVENTIONAL ART-- such as to be commensurate with their

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designation in the specification; In FIG. 8, note that reference label --L104-- needs to be provided such as to be commensurate with the description at page 10, line 30; In FIG. 10, note that reference labels --C1-- & --C2-- need to be provided such as to be commensurate with the description at page 11, line 27; In FIG. 11, note that reference labels --A-- & --B-- need to be provided such as to be commensurate with the description of “two series A and B” at page 12, line 11 of the specification.

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “shunt paths” being “on a same substrate” (i.e. claim 4) & the “IC bonding wire” (i.e. claim 5), respectively must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the

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following is required: The specification needs to provide a description that the “shunt paths” are “on the same substrate”, such as recited in claim 4.

Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 5, note that the recitation “an inductor ... is replaced with inductance components” renders the claim vague and indefinite. In other words, once the “inductor” has been recited as a positive feature of the invention, it cannot be “replaced with” an alternative feature (i.e. inductance components) without rendering the scope of the claim vague and indefinite. Clarification is needed.

The following claims have been found to be objectionable for reasons set forth below:

In claim 1, line 5, note that “form” should be rewritten as --provides-- for an appropriate apparatus characterization.

In claim 3, line 3, note that “made” should be rewritten as --comprised-- for an appropriate apparatus characterization.

In claim 4, line 3, note that “formed” should be rewritten as --disposed-- for an appropriate apparatus characterization.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1 is rejected under 35 U.S.C. 102(b) as being clearly anticipated by either Atokawa or Harberts et al.

Note that each reference discloses a high frequency circuit comprising: a plurality of shunt paths (e.g. {L3, R3, C30, D3; L5, R5, C50, D5} in Atokawa; e.g. {L2, C8, 20; L4, C10, 22} in Harberts et al) including an active element (e.g. PIN diode (D3, D5) in Atokawa; e.g. PIN diodes {20, 22} in Harberts et al) and an impedance element (e.g. {L3, R3, C30; L5, R5, C50} in Atokawa; e.g. {L2, C8; L4, C10} in Harberts et al) connected between a high frequency transmission path (e.g. {L31, C34, C45, L51} in Atokawa; e.g. {C2, C4, C6} in Harberts et al) and ground. Note that when the active devices are in an “ON” state (i.e. the PIN diodes (D3, D5) are in a conducting state in Atokawa; i.e. the PIN diodes {20, 22} are in a conducting state in Harbert et al), the shunt paths provide a parallel resonant circuit (i.e. resonator {R3, R5} is in parallel resonance with capacitor {C30, C50}, respectively in Atokawa; i.e. the capacitor {C8, C10} is in parallel resonance with inductor {L2, L4}, respectively by virtue of it’s connection to ground in Harberts et al) and when the active devices are in an “OFF” state (i.e. the PIN diodes (D3, D5) are in a non-conducting state In Atokawa; i.e. the PIN diodes {20, 22} are in a non-conducting state in Harbert et al), the shunt paths provide a series resonant circuit (i.e. the inductor {L3, L5} is in series resonance with resonator {R3, R5}, respectively in Atokawa; the capacitor {C10} is in series resonance with inductor {L2, L4}, respectively in Harberts et al).

Claims 1, 2 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Tsuneo et al (cited by applicant).

Note that the Tsuneo reference discloses a high frequency circuit comprising: a plurality of shunt paths (e.g. {C2, L2, FETs {4a, 4b} in Fig. 6) including an active element (e.g. FETs

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{4a, 4b} in Fig. 6) and an impedance element (e.g. {L2, C2: L2} in Fig. 11) connected between a high frequency transmission path (e.g. the path including switch {SW3}) and ground. Note that when the active devices are in an "ON" state (i.e. the FETs (4a, 4b) are in a conducting state in Fig. 6), the shunt paths provide a parallel resonant circuit (i.e. the right hand side inductor {L2} is in parallel resonance with capacitor {C2}) and when the active devices are in an "OFF" state (i.e. the FETs (4a, 4b) are in a non-conducting state) the shunt paths provide a series resonant circuit (i.e. the inductor {L2} on the left hand side is in series resonance with capacitor {C2}).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Atokawa or Harberts et al in view of Weidman et al.

Note that each of the above cited primary references discloses the claimed invention except for the active element being an FET comprised of gallium arsenide and disposed on a common substrate.

Weidman et al discloses the implementation of active elements (i.e. electrical switches) through the use of gallium arsenide semiconductor media utilizing a monolithic microwave integrated circuit (i.e. MMIC) technology (which is known to those of ordinary skill in the art to include a common substrate). For example, see the description at column 2, lines 46-50.

Accordingly, it would have been obvious in view of the references, taken as a whole, to have modified the active switching element (i.e. PIN diode) in either one of the primary

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references to have been a MMIC FET switch circuitry, such as taught by Weidman et al. Such a modification would have been considered an obvious substitution of art recognized equivalent active switching elements, which would have performed the equivalent switching function, thereby suggesting the obviousness of such a combination.

Claims 3, 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuneo et al (cited by applicant) in view of Weidman et al.

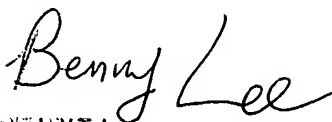
Tsuneo et al discloses the claimed invention except that the active FET switching element is not formed of gallium arsenide on a common substrate.

As described above, Weidman et al discloses that the formation of FET switches comprised of gallium arsenide and having a common substrate (i.e. through use of MMIC technology) would have been conventional in the art.

Accordingly, it would have been obvious in view of the references, taken as a whole, to have realized the active FET switches in Tsuneo et al as gallium arsenide FET switches implemented by a MMIC technology, such as taught by Weidman et al. Such a modification would have been an obvious substitution of art recognized equivalent FET switch technology, which would have performed the equivalent switching function, thereby suggesting the obviousness of such a modification.

Any inquiry concerning this communication should be directed to Benny Lee at telephone number 571 272 1764.

B. Lee


BENNY T. LEE
PRIMARY EXAMINER
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